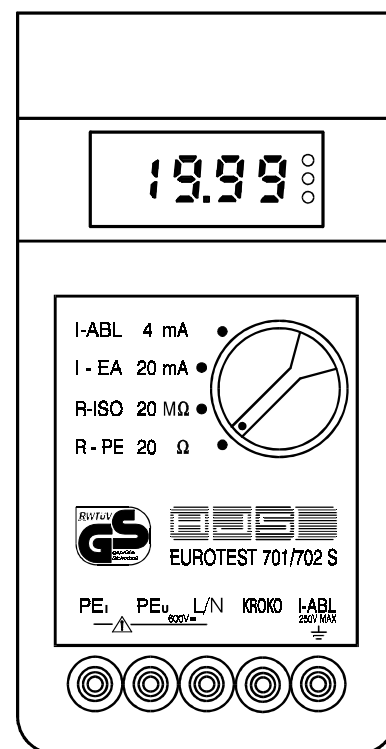


www.hjs-elektronik.com



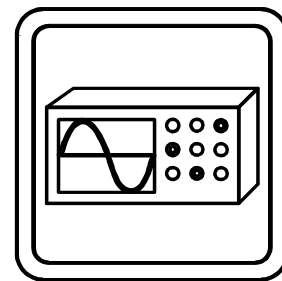
EUROTEST 701/702 S

OPERATING INSTRUCTIONS
(Version "A3/C/S2")

TABLE

CHAPTER/PAGE	2
FUNCTIONAL ELEMENTS	3
SAFETY PRECAUTIONS	4
UTILITIZATION	4
SAFETY ELEMENTS	4
LITERATURE	5
MEASUREMENTS:	
PROTECTIVE CONDUCTOR RESISTANCE R-PE	6,7
INSULATION RESISTANCE R-ISO	8,9
PROTECTIVE CONDUCTOR CURRENT I-SL (direct method)	10
PROTECTIVE CONDUCTOR CURRENT I-SL (equ. leakage curr. method)	11
TOUCH CURRENT I-BR (direct method)	12
TOUCH CURRENT I-BR (equ. leakage curr. method)	13
TECHNICAL SPECIFICATION	14
LIMITS + DISPLAY OF LIMIT VALUES	15
DISPLAY OF MEASUREMENT VALUES	15
GENERAL INFORMATION	15,16
REPAIR SERVICE	16
CALIBRATION SERVICE	16
DATA INTERFACE	16
WARRENTY	16
CALIBRATION RECORD	17

BEFORE OPERATING...



READ THE MANUAL!



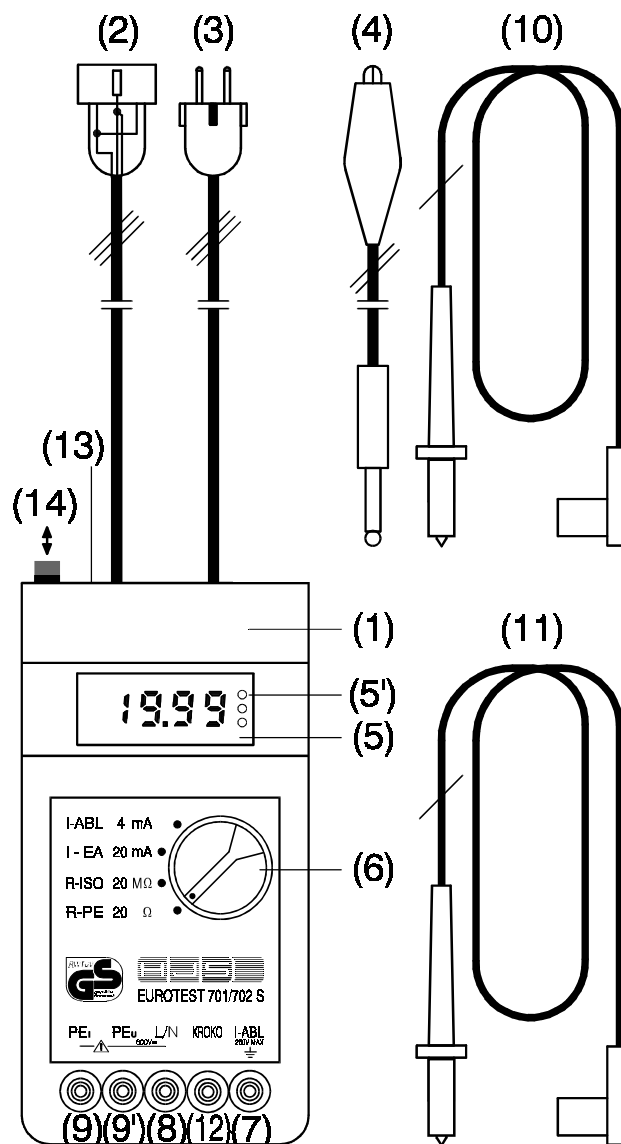
MADE IN GERMANY

...we do our very best

FUNCTIONAL ELEMENTS

DESCRIPTION OF FUNKTIONSELEMENTE

- (1) MEASURING INSTRUMENT
- (2) Testsocket for R-PE, R-ISO, and I-EA measurement.
- (3) Mains connector.
- (4) Test lead w. crocodile clip for R - PE measurement. (The line resistance is length independently compensated for > fourpole measurement)
- (5) PLL-controlled LCD for display of values.
- (5') Limit display, 3 LEDs per measurement range
- (6) Range selector.
- (7) I-ABL terminal for leakage current measurement.
- (8) L/N terminal for R-ISO and I-EA measurement. Connected to the test socket (2) via the outer conductors L and N .
- (9) PE_i terminal for R-PE measurement *only*. Connected to PE in the test socket (2) .
- (9') PE_u terminal for R - PE, R-ISO, and I-EA. measurement. Connected to PE in the test socket (2).
- (10) Test lead with probe tip.
- (11) Test lead with probe tip.
- (12) KROKO terminal for R-PE measurement.
- (13) Data interface to PC or notebook
- (14) Switch for (de)activating the PE in the test socket.



ACCESSORIES (OPTIONAL)

- Z0.1 Software set: WINDOWS analysis program + interface adaptor (Z0.2) for the preparation of test record.
- Z1 Test adapter with RCD, for leakage current measurement. (1- ph.: earthing-contact type L/N/PE on earthing-contact type L/N/PE)

- Z2 insulating pad for tester and test sample.
- Z3 Test adapter for R-PE, R-ISO, and I-EA measurement. (CEE 3L/N/PE on earthing-contact type L/N/PE) (i.V.)
- Z4 Test adapter with RCD for leakage current measurement. (3 - ph.: CEE 3L/N/PE on CEE 3L/N/PE)(i.V.)
- Z5 Set of test leads: lead with crocodile clip, as (4), but 2 m long + Y adapter (Z6) for bridging longer distances between the measurement points.

SAFETY

SAFETY PRECAUTIONS

Before taking the INSTRUMENT into operation, make sure that the instrument's nominal voltage matches the mains voltage.

The INSTRUMENT serves for electronically testing electrical devices in accordance with DIN VDE 0701/ DIN VDE 0702. It has been manufactured and tested as defined in DIN VDE 0404, DIN EN 61010, DIN EN 61557, and has been shipped in a safety technological perfect condition.

To maintain this condition and ensure a safe operation, the user has to observe the warnings and notes included in these operating instructions :

ATTENTION

This INSTRUMENT may be *exclusively* used for electrical testings. Please note that the respective standards may require additional manual and visual inspections, temperature, functional, and drop tests etc. depending on the type of test sample.

ATTENTION

The INSTRUMENT may be exclusively connected to an intact and safe 230V AC mains. The mains socket must provide for an intact connection of the protective conductor (earthing -contact type PE).

ATTENTION

A voltage supply to the PE at the mains socket may result in incorrect leakage current measurements.

ATTENTION

At a faulty power supply, the INSTRUMENT and the test sample are to be immediately disconnected from the mains.

ATTENTION

Using the INSTRUMENTS for measurements *in* electrical equipments is *not* permissible.

ATTENTION

Carrying out measurement in the immediate vicinity of electrical or electromagnetic fields as well as HF-emitting devices or equipments should be avoided.

ATTENTION

Please account for the occurrence of unexpected voltages at the test samples. The anti-radio-interference-capacitor may be charged after the insulation resistance has been measured.

Please, always check the test sample's protective conductor resistance R - PE first .

Without an intact connection of the protective conductor to the test sample the results of an insulation resistance and protective conductor current measurement are meaningless.

If a safe operation of the INSTRUMENT seems to be no longer ensured the INSTRUMENT is to be taken out of operation and has to be protected against accidental use.

It is to be assumed that a safe operation of the INSTRUMENT is no longer ensured if the INSTRUMENT

- > is visibly damaged,
- > does not work any more,
- > has been stored under unfavourable conditions,
- > has been subject to heavy strain during transport.

UTILIZATION

The INSTRUMENT is exclusively suited for the testing and measurement on repaired or modified electrical devices as set out in DIN VDE 0701 and for repetitive testings according to DIN VDE 0702 .

Following these provisions i.a. the protective conductor resistance R - PE, the insulation resistance R - ISO, the protective conductor current I - SL, the touch current I - BR and the non prevalence of stress I - SF (T240) is to be tested.

PROTECTIVE ELEMENTS

The INSTRUMENT features a PE connector for the protective conductor and is therefore rated protection class I.

The PE connector is only needed for the leakage current measurement (direct method).

In the I - ABL position, it is connected to the INSTRUMENT's chassis via reversible protective elements. In case of overload voltages of more than 253 V all 3 limit LEDs will start flashing signalling the response of the protective elements.

In all other switch positions the INSTRUMENT is galvanically disconnected from the mains.

L I T E R A T U R E

REFERENCE STANDARDS

SUGGESTED READING

VDE 0100 Teil 200	Errichten von Starkstromanlagen mit Nennspannungen bis 1000 V	Bödeker:	Prüfung ortsveränderlicher Geräte, Verlag Technik
VDE 0104	Errichten und Betreiben elektrischer Prüfanlagen	Bödeker:	Der Prüfplatz in der Elektrowerkstatt, Verlag Technik
VDE 0105 Teil 100	Betrieb von elektrischen Anlagen	Bödeker, Kindermann, Kammerhoff, Matz:	Prüfung elektrischer Geräte nach DIN VDE 0701, 0702, VDE 0751 Anwendung in der Praxis VDE-Verlag (08-2001)
VDE 0106 Teil 1	Schutz gegen elektrischen Schlag		
VDE 0404 Teil 1	Allgemeine Festlegungen		
VDE 0404 Teil 2	Geräte für Wiederholungsprüfung.	Bödeker, Kindermann:	Fachpublikationen zum Thema:
VDE 0411	Sicherheitsbest. für el. Messgeräte		Prüfung el. Geräte nach Instandst. ep 09/2000
VDE 0413	Geräte zum Prüf. v. Schutzmaßnahmen		Kennwerte für den Ableitstrom..... de 09+10/2000
VDE 0701 Teil 1	Allgemeine Anforderungen		Prüfgeräte nach DIN VDE 0404.... ep 09/1999
VDE 0701 Teil 2	Rasenmäher und Gartenpflegegeräte		Pflicht zur Wiederholungsprüfung.. ep 01/2000
VDE 0701 Teil 3	Bodenreinigungsgeräte und Maschinen		Umfang zur Wiederholungsprüfg... ep 02/2000
VDE 0701 Teil 4	Sprudelbadgeräte		Wiederholungsprüfg nach VBG4... ep 03/2000
VDE 0701 Teil 5	Großküchengeräte		PC: - ortsfest oder ortsveränderl..?.. ep 09/2000
VDE 0701 Teil 6	Ventilatoren und Dunstabzugshauben		L-Stromzange u. Fehlerstrommessg. ep 12/2000
VDE 0701 Teil 7	Nähmaschinen		Messung des Ersatz-Ableitstroms de 01/2001
VDE 0701 Teil 8	Ortsfeste Wasserwärmer		Prüfplätze ohne Berührungsschutz ep 04/2001
VDE 0701 Teil 200	Netzbetriebene elektronische Geräte	Egyptien:	Unterweisung in der Elektropraxis Verlag Technik
VDE 0701 Teil 240	Datenverarb-Einrichtg u. Büromasch.		
VDE 0702 Teil 1	Wiederholungsprüfungen	Jeiter:	Das neue Gerätesicherheitsgesetz, Verlag C.H.Beck
VDE 0711 Teil 1	Leuchten, allgemeine Anforderungen		
VDE 0751 Teil 1	Wiederholungsprüfungen von med. elektrischen Geräten	ZVEH (Hrsg):	Handwerksordnung, Verlag Heider
VDE 0805	Sicherheit von el. Büromaschinen	Honig:	Handwerksordnung, Kommentar, Verlag C.H.Beck
VDE 1000 Teil 10	Anforderungen an die im Bereich der Elektrotechnik tätigen Personen	Gothsch:	VBG4, Elektrische Anlagen und Betriebsmittel, BG F+E (Hrsg), Köln
DIN EN 13306	Begriffe der Instandhaltung	Rosenberg	VDE-Prüfung nach VBG4/VDE-Verl.

MEASUREMENT: PROTECTIVE CONDUCTOR RESISTANCE R-PE

MEASUREMENT: PROTECTIVE CONDUCTOR RESISTANCE R-PE

(Sample connections fig. 1, 2, and 3)

The protective conductor resistance R - PE **must not be measured until after a visual inspection** of the instrument and all parts representing a possible electrical or mechanical danger or risk of fire!

As for instruments classified protection class I the low ohm passage of the PE between the test sample's PE output and its housing or all touchable and conductive parts connected to the PE is measured.

> The test sample may be "in operation" or disconnected from mains.

> During this measurement, the power cord has to be sectionwise moved over the entire length especially near the connection points.

> Please note that with hard-wired devices and/or such being "in operation" parallel earth connections and protective conductor currents may negatively affect the measurement results.

The line resistances of the test leads are length independently compensated for (fourpole measurement), however, if adapters or adapter leads are used this compensation is ineffective.

Therefore, we recommend to determine the adapter leads' resistance before measuring the R - PE and to account for this value when documenting the measurement results.

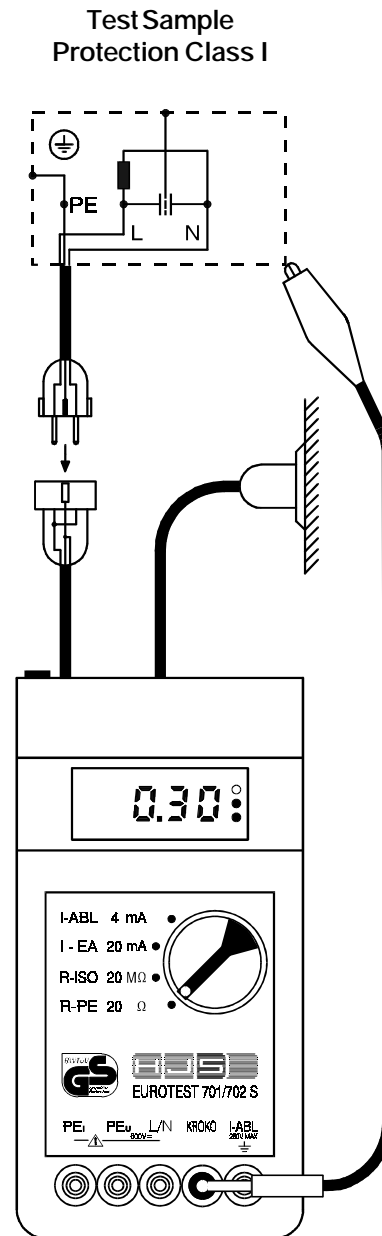
If the protection class I test sample features no mains plug - e.g. stationary devices - or if the plug does not match the test socket, the measurement can be made using the terminals PE_i+PE_u.

In this case, the PE in the test socket has to be deactivated via the selector (14).

Alternatively to the test leads supplied the test lead with crocodile clip (Z5) and the Y-adaptor (Z6) should be used for bridging larger distances between the measurement points.

For limits and the display of limit values please refer to: page 15

Figure 1



Selector Position: R-PE

Test sample with mains plug

Test sample "out of operation"

MEASUREMENT: PROTECTIVE CONDUCTOR RESISTANCE R-PE

Figure 2

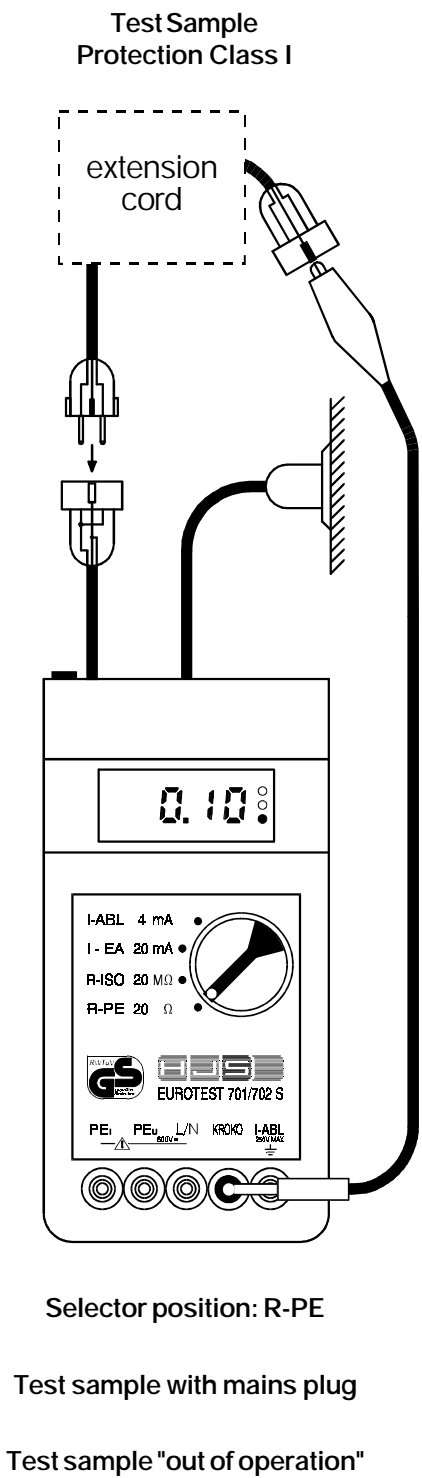
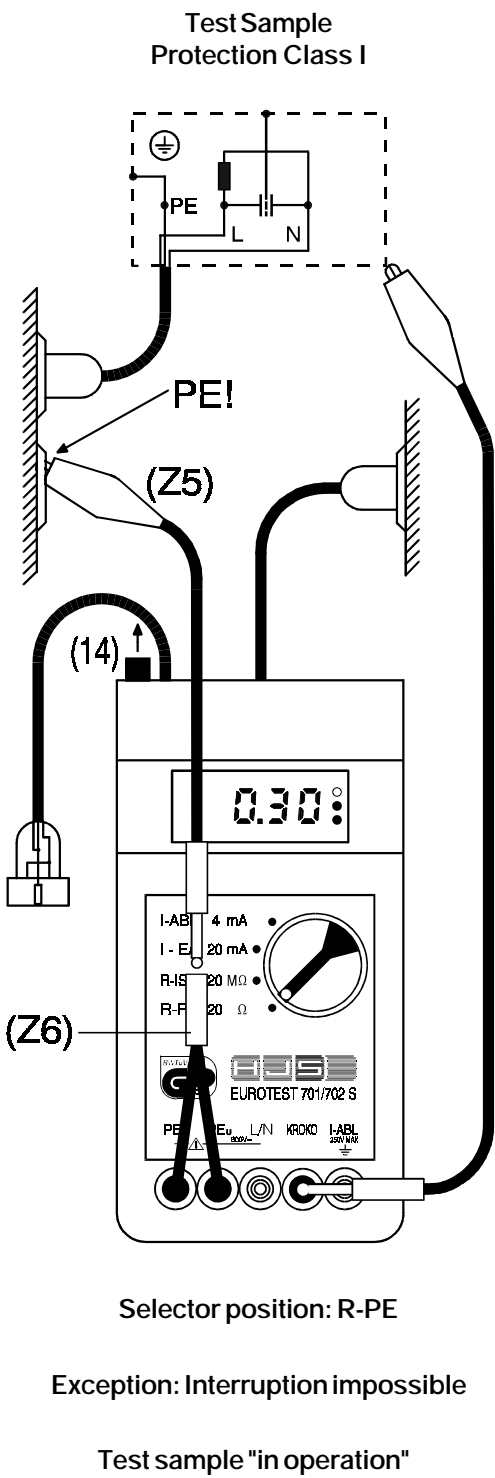


Figure 3



MEASUREMENT: INSULATION RESISTANCE R-ISO

MEASUREMENT: INSULATION RESISTANCE R-ISO

Figure 4

(Sample connection figure 4, 5, and 6)

The R-ISO is measured as follows:

- a) for protection class I devices: between the test sample's PE connector and all active parts,
- b) for protection class I devices between all active parts as well as all touchable conductive parts not being connected to PE .
- c) for protection class II devices: between all active parts as well as all touchable conductive parts or such being connected to the housing.

> The test sample is "out of operation" but switched on.

> Devices to be used in water must (or can) be covered with water during the measurement ! (see standards)

> The measurement is to be made in all switch positions (step-by-step systems, relays, controllers, temperature switches etc.) .

> The correct measurement value is the smallest ! value measured.

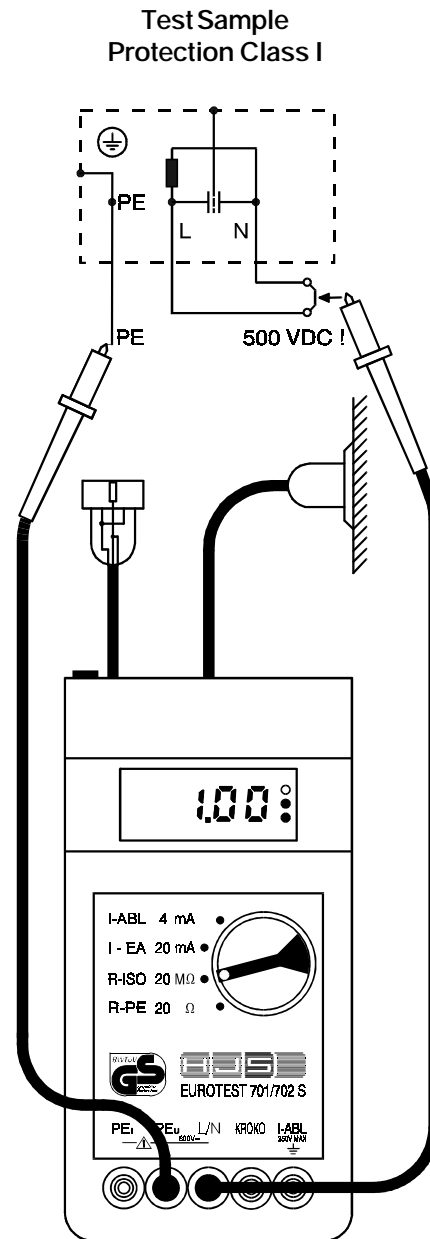
> 500 VDC test voltage! Touching the test lead tips may result in shock reactions poses, however, no hazard at all!

If the protection class I or II Prüfling has no mains plug - e.g. stationary devices - or if the plug does not match the test socket, the measurement can also be made via the terminals PE_U + L/N .

(Applies analogously to polyphase test samples)

If the measurement is carried out in accordance with b) on protection class I devices with an earthing -contact type plug, the PE in the test socket has to be deactivated via the selector (14).

For limits and the display of limit values see page 15



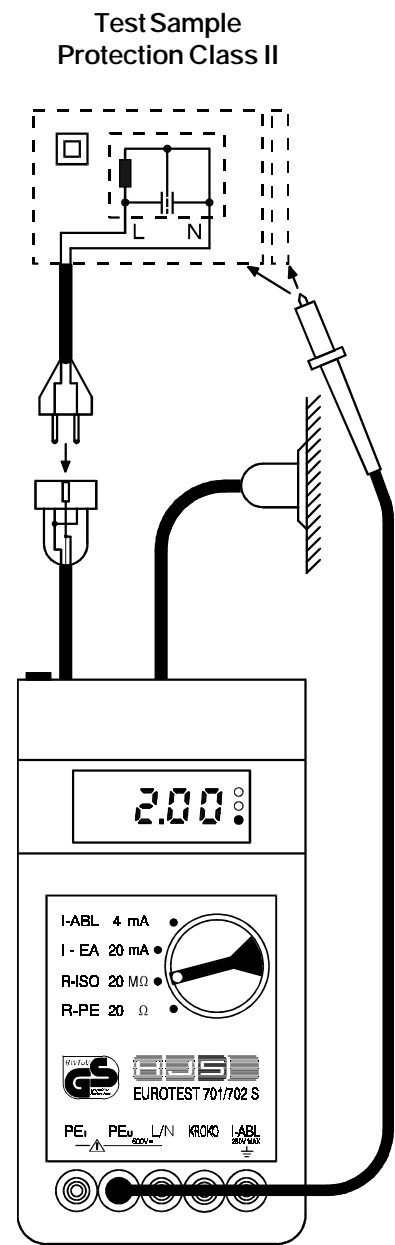
Selector position: R-ISO

Exception: test sample without mains plug

Test sample "out of operation" but switched on

MEASUREMENT: INSULATION RESISTANCE R-ISO

Figure 5

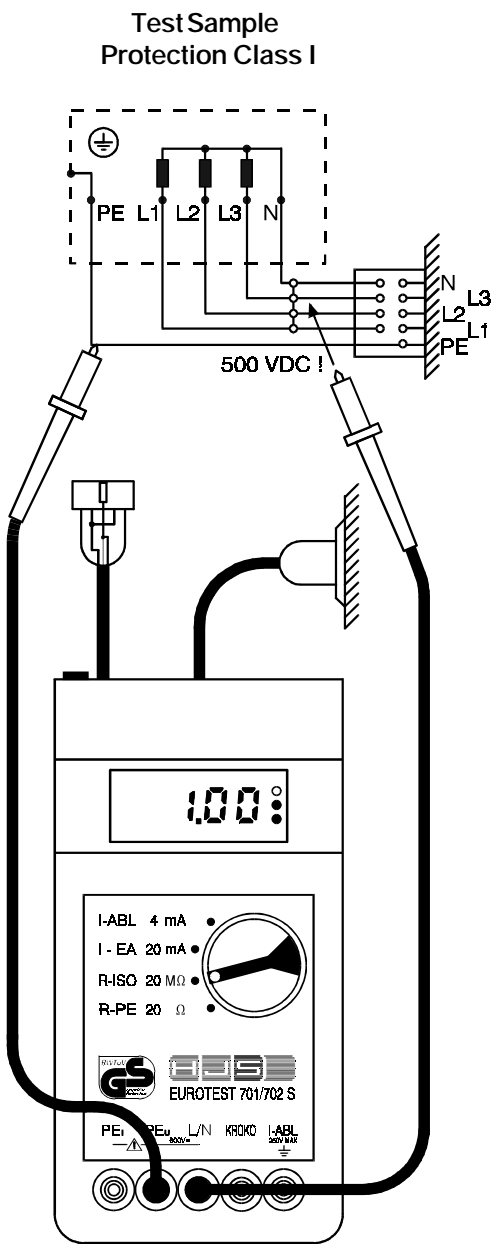


Selector position: R-ISO

Test sample with mains plug

Test sample "out of operation", but switched on

Figure 6



Selector position: R-ISO

Exception: hard-wired DS test sample

Test sample "out of operation" but switched on

Attention: Set test sample stress-free!

MEASUREMENT: PROTECTIVE CONDUCTOR CURRENT I-SL

MEASUREMENT: PROTECTIVE CONDUCTOR CURRENT I-SL (direct method*)

(Sample connections: figure 7)

If operated set out herein, the protection conductor current I-SL is a leakage current of a protection class I device flowing via the insulation and protective conductor to the earth.

The measurement has to be made if there is no other chance to ensure that all parts affected by the mains voltage have been tested during the R - ISO measurement or if the R - ISO test has not been passed or carried out.

> Test sample and INSTRUMENT are connected to the same circuit.

> *During this measurement, the test sample is "in operation"!*

> If possible, the measurement is made in all! plug positions of the test sample's mains plug and in all selector positions (step-by-step systems, relays, controllers, temperature switches etc.). The correct measurement value is the highest value measured.

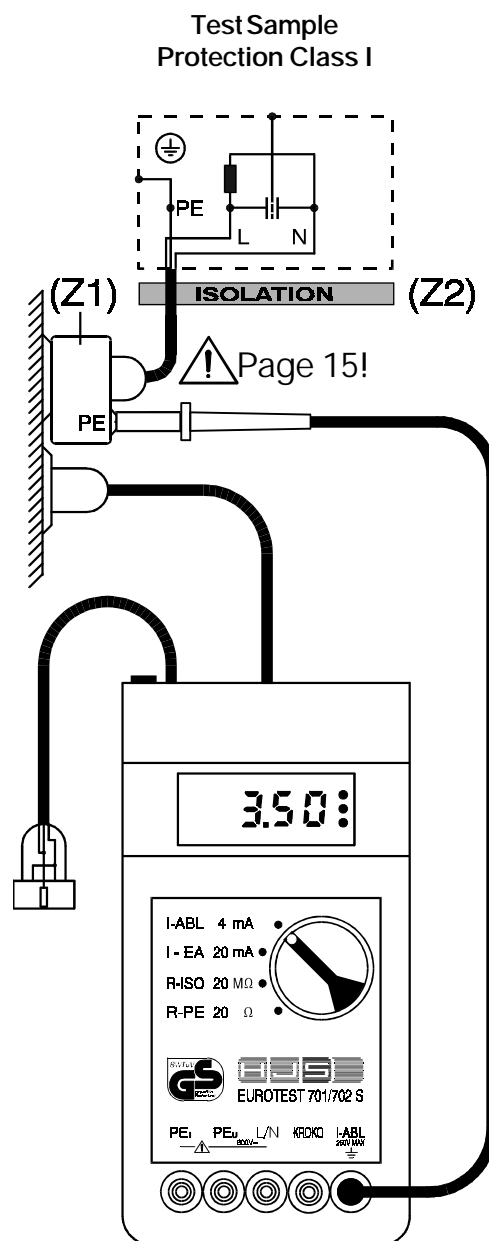
> The test sample *must* be set insulated! Except for the power cord no other conductive connections to other devices or the earth potential may be made.

Measuring the protective conductor current I-SL using this direct method should be made using the measurement adapter (Z1) with integrated RCD because of the dangers resulting from touching possibly defect test samples. Connect the test lead with the adapter first and then the adapter/test sample to the mains.

*) This method is also called "direct method" since the test circuit is directly connected to the mains. Using the direct measurement method for the exclusive documentation of the test sample's insulating capacity is permissible.

For limits and the display of limit values see page 15

Figure 7



Selector position: I-ABL

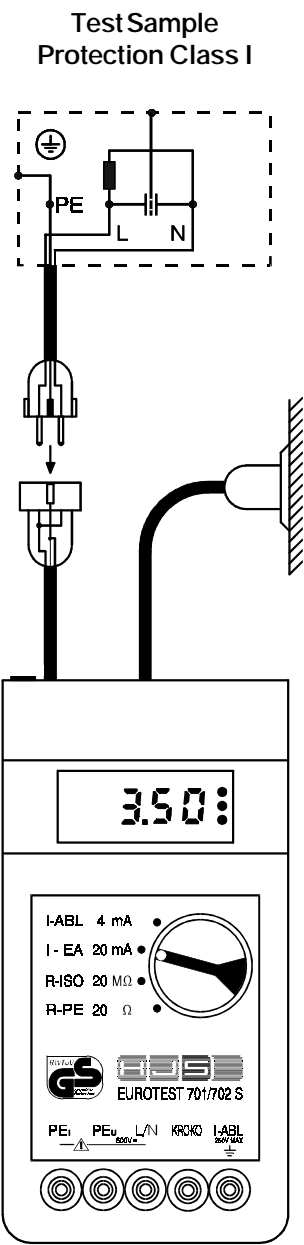
Test sample with mains plug

Test sample "in operation"

Measurement made using the direct method

MEASUREMENT: PROTECTIVE CONDUCTOR CURRENT I-SL

Figure 8



Test sample with mains plug

Test sample "out of operation" but switched on

Measurement using the eq. leakg. current method

MEASUREMENT: PROTECTION CONDUCTOR I-SL (equivalent leakage current method*)

(Sample connection figure 8)

If the protective conductor current I-SL is measured using the "equivalent leakage current method", the R-ISO test has to be passed first!

This measurement is made:

on protection class I devices: between the test sample's PE-connector and all active parts.

> The test sample is "out of operation" but switched on.

> The measurement is made in all selector positions (step-by-step systems, relays, controllers, temperature switches etc.). The correct measurement value is the highest value measured.

> As for test samples with switches controlling all poles and symmetric capacitive power input, the measurement values may be divided by 2! (See standard)

If the protection class I test sample has no mains plug - e.g. stationary devices - or if the plug does not match the test socket, the measurement can be made using the terminals $PE_u + L/N$.

(Applies analogously to polyphase test samples)

*) When using the "equivalent leakage current method" the test circuit is not directly connected to the mains and the "leakage current" is generated by the INSTRUMENT.

The word "equivalent" refers to the fact that in this test an artificial mains network is simulated.

This method has its advantages and disadvantages. The advantages: The test setting is small, cost efficient, simple and safe application as well as a high reproducibility of the measurement values. The disadvantages: The test can only be made if the R-ISO test has been passed and all switches can be switched on..

For limits and the display of limit values see page 15

MEASUREMENT: TOUCH CURRENT I-BR

MEASUREMENT: TOUCH CURRENT I-BR (direct method*)

Figure 9

(Sample connection figure 9)

The touch current I-BR is a leakage current generated at proper operation of the device. It flows through the insulation, touchable conductive parts and the person touching them to the ground.

The measurement is made if it can not be ensured that all parts affected by the mains voltage have been covered in the R - ISO test or if the R - ISO has not been passed or carried out.

The touch current is measured:

- a) with protection class I devices: on all touchable conductive parts *not* being connected to the PE ,
- b) with protection class II devices: on all touchable conductive parts.

> Test sample and INSTRUMENT are connected to the same circuit.

> *During the measurement the test sample is "in operation"!*

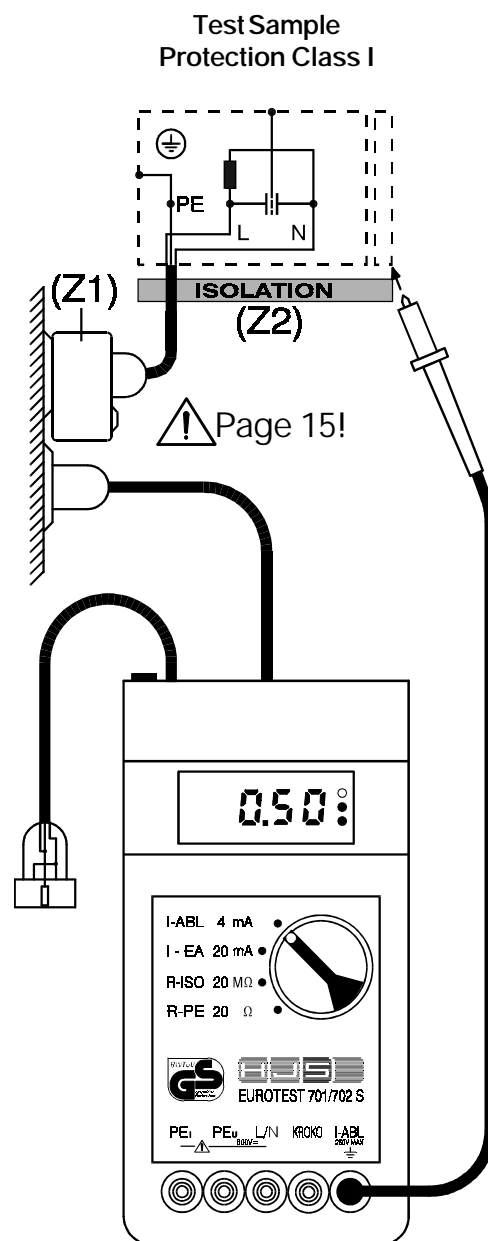
> If possible, the measurement is made in all! plug positions of the test samples's mains plug and in all selector positions (step-by-step systems, relays, controllers, temperature switches etc.). The correct measurement value is the highest value measured.

> The test sample *must* be insulated! Except for the power cord no other conductive connections to other devices or the earth potential may exist.

Measuring the touch current I-BR using this direct method should be made using the measurement adapter (Z1) with integrated RCD because of the dangers resulting from touching possibly defect test samples. Connect the test lead with the adapter first and then the adapter/test sample to the mains..

*) This method is also called "direct method " since the test circuit is directly connected to the mains. Using the direct measurement method for the exclusive documentation of the test sample's insulation capacity is permissible.

For limits and the display of limit values see page 15



Selector position: I-ABL

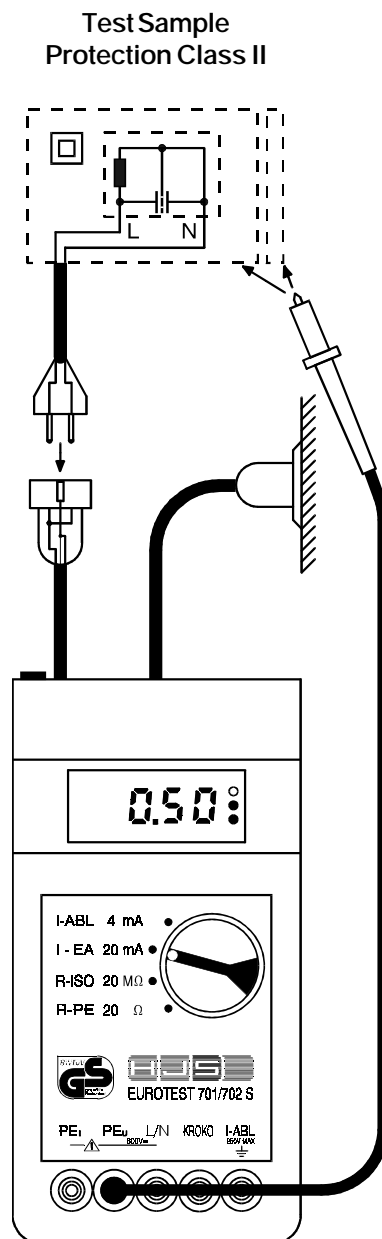
Test sample with mains plug

Test sample "in operation"

Measurement using the direct method

MEASUREMENT: TOUCH CURRENT I-BR

Figure 10



MEASUREMENT: TOUCH CURRENT I-BR (equivalent leakage current method*)

(Sample connection figure 10)

If the touch current I-BR is measured using the "equivalent leakage current method" the R-ISO test must have been passed first!

The touch current I-BR is measured:

- a) with protection class I devices: between all active parts as well as all touchable conductive part not being connected to the PE,
- b) with protection class II devices: between all active parts as well as all those being in contact with the housing or being touchable and conductive respectively..

> The test sample is "not in operation" but switched on.

> The measurement is to be made in all selector positions (step-by-step systems, relays, controllers, temperature switches etc.) .The correct measurement value is the highest value measured.

> As for test samples with switches controlling all poles and symetric capacity power input, the measurement values may be divided by 2! (See standard)

If the protection class I or II test sample has no mains plug -e.g. stationary devices - or if the plug does not match the test socket, the measurement can also be made using the terminals $PE_U + L/N$.

(Applies analogously to polyphase test samples)

If the measurement on protection class I devices with earthing-contact type plug is made in accordance with a) the PE in the test socket has to be deactivated via the selector (14) .

*) When using the "equivalent leakage current method" the test circuit is not directly connected to the mains and the "leakage current" is generated within the INSTRUMENT . (also see p. 11)

NOTE: In DIN VDE 0701 part 240 the touch current I-BR is called "stress-free I-SF" !

For limits and the display of limit values see page 15.

TECHNICAL SPECIFICATION

MEASUREMENT RANGE R-PE

Nominal range of use	0.....19,99 Ω
Open-circuit voltage	max. 20 VAC
Short-circuit current	max. 350 mA
Intrinsic error M. 1) 2)	+ - 2,5% +2D
Operating error M. 2)	+ - 10% +2D
Overload value	./.
Overload time	./.

MEASUREMENT RANGE R-ISO

Nominal range of use	019,99 M Ω
open-circuit voltage	max. 600 VDC
Short-circuit current	max. 5 mA
Intrinsic error M. 1) 2)	+ - 2,5% +2D
Operating error M. 2)	+ - 10% +2D
Overload value	253 V
Overload time	permanet

MEASUREMENT RANGE I-EA (Eq. Leakg. Cur. Method)

Nominal range of use	0.....19,99mA
Open-circuit voltage	max. 40 VAC
Short-circuit voltage	max. 2 mA
Reference voltage / Ri / Rref	230 VAC / ~20 K / ~2 K
Intrinsic error M. 1) 2)	+ - 2,5% +2D
Operating error M. 2)	+ - 10% +2D
Overload value	253 V
Overload time	permanent

MESAUREMENT RANGE I-ABL (Direct Method)

Nominal range of use	0.....3,99mA
Method / Ri	direct, AC+DC / ~2 K
Intrinsic error M. 1) 2)	+ - 2,5% +2D
Operating error M. 2)	+ - 10% +2D
Overload value	253 V
Overload time	permanent

If the current exceeds 3,99 mA , the LC display indivates an overrun condition (I.) and the 3 LEDs are flashing. The INSTRUMENT is reset by removing the load and turning the range selector once.

REFERENCE CONDITIONS

Nominal voltage	230 V + - 0,1%
Nominal frequency	50 Hz + - 0,1%
Curvature	Sinus, K < 0,5%
Ambient temperature	+23 °C + - 1 K
Humidity	48% ... 52%
Load resistances	linear

1) only under reference conditions! 2) > 20D

NOMINAL CONDITIONS OF USE

Nominal voltage	207 V ... 253 V
Nominal frequency	48 Hz ... 52 Hz
Curvature	Sinus
Ambient temperature	0 °C ... 35 °C

ENVIRONMENT

Temp. storage	- 20 °C ... + 60 °C
Temp. operation	0 °C ... + 35 °C
Accuracy	+ 15 °C ... + 30 °C
Humidity	no Dew!
Climate class	2z/0/50/-20/75%
Height above sea level	max. 2000 m
Application	only indoor

POWER

Nominal voltage	207 V ... 253 V
Nominal frequency	48 Hz ... 52 Hz
Power consumption	< 10 VA

ELECTRICAL SAFETY

Protection class	I (one)
Nominal voltage	230 V
Test voltage	3,7 KV
Overvoltage category	II
Degree of soiling	2
EMV: emittance of/immunity from noise acc. DIN EN 61326	

MECHANICAL CONSTRUCTION

Display	LCD 3,5 - 13 / PLL gest.
Display of m. values	3LED in all measurement ranges
Protection class	Housing IP 40, Conn. IP 20
Dimensions/weight w/o leads	100x195x40mm/~500g

DATA INTERFACE

Type	seriell
Format	2400, N, 8, 1; o. Handshake
Connector	Detend-Box 3,5 mm

OPERATING ERROR

When documenting the measurement values the INSTRUMENT's Operating error in relation to the limit value is to be accounted for.

When using the analysis program, the abweichung may be accounted for.

STANDARDS + REGULATIONS APPLYING TO THE PRODUCTION

DIN EN 61010-1 / DIN EN 61557-1 / DIN VDE 0404 -1,2

GENERAL INFORMATION



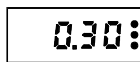
DISPLAY OF LIMIT VALUES

In all measurement ranges, the most significant limit values are displayed via 3 LEDs. For further limit values refer to the standards. Any changes to the set of limit values to be displayed, e.g. due to modified standards, can be accounted for by replacing a micro chip. (Manufacturer's service)

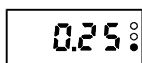
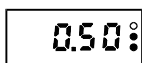
R-PE MEASUREMENT RANGE

		
V-Line	Standard	Exception

R-ISO MEASUREMENT RANGE

		
PC II	PC I	Exception

I-EA MEASUREMENT RANGE (Eq. Leakg. Cur. Method)

		
(I-SF, part 240)	I-BR	I-SL

I-ABL MEASUREMENT RANGE (Direct Method)

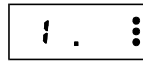
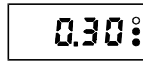
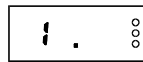


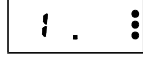

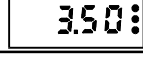
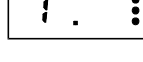

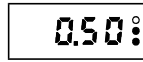
		
(I-SF, part 240)	I-BR	I-SL

NOTES ON I - ABL MEASUREMENT RANGE





Leakage current measurements (I-SL, I-BR, I-SF) on test samples being properly connected to the mains have been defined as "works carried out in the near of live components" (DIN VDE 0104 and 0105). Therefore, the following safety precautions must be taken i.a.:

- 1.) "If the test circuit is directly connected to the low voltage net RCD protective elements of 10...30 mA must be used"
- 2.) "On test stations with voltages up to 1000 V the tester's position must be insulated". (quote: Standard) > > >

DISPLAY OF MEASUREMENT VALUES

	Display	Cause / Interpretation
R - PE		"OVERRUN", all 3 limit LEDs are flashing
		R - PE > 20 Ω
		PE disrupted
		> Test sample not connected
R - ISO		Displayed value: 0,30 Ω
		1. + 2. limit LEDs are lit
		"OVERRUN"
		R - ISO > 20 MΩ
I - EA		Test sample not connected
		Test sample not switched on
		All 3 limit LEDs are lit
		Sample short-circuited btw. PE + L/N
I - ABL		Displayed value: 0,30 MΩ
		All 3 limit LEDs are lit
		"OVERRUN", all 3 limit LEDs are lit
		I - EA > 20 mA
I - EA		Sample short-circuited btw. PE + L/N
		Terminals PE + L/N short-circuited.
		Test sample not connected
		Test sample not switched on
I - ABL		Displayed value: 3,50 mA
		All 3 limit LEDs are lit
		"OVERRUN", all 3 limit LEDs are flashing
		Sample poses risk of electrical shock, i.e. current > 4,00 mA!
I - ABL		Disconnect test sample immediately from mains!
		Test sample not connected
		Test sample "not in operation"
		Risk of el. shock (Ideal value)
I - ABL		Displayed value: 0,50 mA
		1. + 2. limit LEDs are lit

NOTES ON I - ABL MEASUREMENT RANGE

-  Connect RCD in series! (s. accessories Z1/Z4, opt.)
-  Insulate test sample! (s. accessories Z2, opt.)
-  Insulate tester's position ! (s. accessories Z2, opt.)
-  Ensure proper connection to mains !

GENERAL INFORMATION

REPAIR SERVICE

If the hazardfree operation of the INSTRUMENT seems to be no longer ensured, the INSTRUMENT is to be taken out of operation and to be protected against accidental use.

A safe operation of the INSTRUMENT is likely to be impossible if :

- > there are visible damages to the INSTRUMENT,
- > the INSTRUMENT does no longer work,
- > it has been stored under unfavourable conditions,
- > it has been subject to excessive strain during transport.

When opening the housing live components may be accessible. Before calibrating, maintaining, repairing or replacing components, the INSTRUMENT is to be disconnected from all voltage sources, provided an opening of the housing is necessary .

If a calibration, maintainance or repair on the open and live INSTRUMENT is unavoidable , these works must be carried out by a qualified technician being aware of the risks.

The capacitors in the INSTRUMENT may still be charged even if the INSTRUMENT has been disconnected from all voltage sources. The capacitors in the high voltage component are to be discharged by short-circuiting them if necessary.

However, any repairs should exclusively be carried out by our factory technicians in order to maintain the approval.

CALIBRATING SERVICE

If operated in accordance with the instructions given herein, the INSTRUMENT is maintainance free. In order to long-term ensure the reproducibility and accuracy of the measurement results, the INSTRUMENT is, however, to be re-calibrated in regular intervals. We recommend to have the INSTRUMENT re-calibrated once per annum by our factory service.

DATA INTERFACE

The INSTRUMENT features an interface for transmitting the data to a PC or notebook.

A WINDOWS analysis program and the interface adapter are optionally available .

WARRANTY

Any shortcomings attributable to defective material or poor workmanship being reported to the manufacturer within 24 months after the INSTRUMENT has been purchased will be eliminated free of charge. The manufacturer decides at his sole discretion whether to repair or replace the respective component or the INSTRUMENT.

In case of a warranty claim, please return the INSTRUMENT including all accessories in its original packing together with the receipt or invoice to your local dealer or our factory service.

Any misuse or use other than for the purpose described herein as well as the deployment of "foreign", i.e. unauthorized and non-accepted accessories, will result in the expiration of the warranty. Any repairs under warranty will not result in an extension of the warranty period.

We do not accept any liability for damages, subsequent damages or consequential damages attributable to improper use, failure or defective components.

LIMITED LIABILITY (R-ISO MEASUREMENT)

The manufacturer and/or distributor and/or reseller of the INSTRUMENT accept no liability for any direct or indirect damages to devices, EDP systems, computers, peripheral devices or data, possibly attributable to a R-ISO test.

During the R-ISO test voltages of up to 750 VDC may occur at the device under test and/or any networked devices/systems.

TEST CERTIFICATION

We hereby certify that the INSTRUMENT complies with the specifications given herein and has been shipped ex works in a safety technologically perfect condition.

The standards and measurement instruments applied in the production process and used for the calibration of the INSTRUMENT comply with the requirements towards accuracy specified in the respective national and international standards.

CALIBRATION RECORD

SERIAL NUMBER:

DATE / PLACE / CAL. LAB. / NAME NEXT CALIBRATION / TEST BADGE

DATE / PLACE / CAL. LAB. / NAME NEXT CALIBRATION / TEST BADGE

DATE / PLACE / CAL. LAB. / NAME NEXT CALIBRATION / TEST BADGE

DATE / PLACE / CAL. LAB. / NAME NEXT CALIBRATION / TEST BADGE

DATE / PLACE / CAL. LAB. / NAME NEXT CALIBRATION / TEST BADGE

These operating instructions are a guide to the applicable testing methods and operation of the INSTRUMENT.

The testing procedures, diagrams, limits etc. given herein are examples and correspond to the state-of-technology at the date of publishing.

Any changes in standards and requirements will be accounted for at the time they take effect.

Therefore, we recommend to always observe the current standards and legal provisions:

Standards + PROVISIONS APPLYING TO THE OPERATION
DIN VDE 0701-1 ff / DIN VDE 0702-1 / DIN VDE 0105-100
BGV A2 / (old: VBG4) / GUV 2.10 / UVV 1.4 / MedGV / MPG

subject to change and errors excepted / GB-EURObda04.p65.010501

© HJS ELEKTRONIK GMBH & CO. KG, 28309 BREMEN
Funkschneise 5-7, Tel: 0421-413323, Fax: 0421-413326
net: www.hjs-elektronik.com, mail: hjsuck@hjs-elektronik.com